

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 - 3. (Cancelled)

4. (Currently Amended) A ~~The method of claim 3, the haptic feedback being a first haptic feedback, the method, further~~ comprising:

updating data values associated with at least a portion of a virtual hand displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer, the portion of the virtual hand directly contacting a virtual body part to produce a virtual palpation within the graphical environment;

outputting a first haptic feedback to the object when the virtual palpation within the graphical environment occurs; and

~~outputting a second haptic feedback, the second haptic feedback being a scaled version of the first haptic feedback.~~

5. (Currently Amended) The method of claim 4, ~~the haptic feedback being a first haptic feedback, the method further comprising:~~

~~outputting a second haptic feedback~~ wherein the second haptic feedback is associated with a position of the virtual hand in a second region of the graphical environment.

6. (Canceled)

7. (Currently Amended) The method of claim 4, wherein the first haptic feedback simulates a heartbeat-induced vascular pulse.

8. (Currently Amended) The method of claim 4, wherein the first haptic feedback is associated with a simulated feature that is at least one of on the surface of the region within the graphical environment and below the surface of the region within the graphical environment, and second haptic feedback is associated with a simulated feature that is at least one of on the surface of the region within the graphical environment and below the surface of the region within a second region of the graphical environment.

9. (Currently Amended) The method of claim 4, wherein the first haptic feedback includes a vibration.

10. (Currently Amended) The method of claim 4, wherein the first haptic feedback includes a spring force.

11. (Currently Amended) The method of claim 4, wherein the object includes a mouse.

12. (Currently Amended) The method of claim 11, wherein the mouse includes an actuator coupled to a housing; and the outputting of the first and second haptic feedback includes outputting the first and second haptic feedback via the actuator.

13. (Currently Amended) The method of claim 12, wherein the first haptic feedback is configured to simulate a heartbeat-induced vascular pulse.

14. (Previously presented) The method of claim 11, the mouse further comprising a grounded linkage.

15. (Currently Amended) The method of claim 14, wherein the outputting the first haptic feedback includes outputting the first haptic feedback via the grounded linkage.

16 – 17. (Canceled)

18. (Currently Amended) ~~The A method, of claim 16, the haptic feedback being a first haptic feedback, comprising:~~

updating data values associated with at least a portion of a virtual hand displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer;

outputting a first haptic feedback to the object based on a first signal associated with an interaction of the portion of the virtual hand with a graphical representation of a virtual being, the graphical representation of the virtual being having a first region and a second region different from the first region and the first haptic feedback being a simulated pulse of the virtual being;
and

outputting a second haptic feedback based on a signal associated with an interaction of the portion of the virtual hand with the second region of the graphical representation.

19. (Previously presented) The method of claim 18, wherein the second haptic feedback is a scaled version of the first haptic feedback.

20. (Canceled)

21. (Currently Amended) The method of claim 18, wherein the first haptic feedback includes a vibration.

22. (Currently Amended) The method of claim 21, wherein the first haptic feedback includes a substantially sinusoidal waveform.

23. (Currently Amended) The method of claim 18, wherein the object includes a mouse having an actuator coupled to a housing, the outputting the first and second haptic feedback includes outputting the first and second haptic feedback via the actuator.

24. (Currently Amended) A method, comprising:

updating data values associated with at least a portion of a virtual ~~hand~~ appendage displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer, the portion of the virtual ~~hand~~ appendage directly contacting a virtual ~~body~~ subject part to produce a virtual palpation of the virtual subject within the graphical environment; and

outputting a first haptic feedback to the object based on interaction of the portion of the virtual ~~hand~~ appendage with a graphical representation of the virtual subject within the graphical environment, the first haptic feedback simulating a palpated feature that is one of on and below ~~the~~ a surface of the graphical representation of the virtual subject; and

outputting a second haptic feedback to the object based on interaction of the portion of the virtual appendage with a graphical representation of the virtual subject within the graphical environment, the second haptic feedback simulating a palpated feature that is one of on and below a surface of the graphical representation of the virtual subject.

25. (Previously presented) The method of claim 24, wherein the application program includes a palpation training program including an instruction to perform a simulated palpation procedure.

26. (Currently Amended) The method of claim 24, wherein the first haptic feedback includes a spring force.

27. (Previously presented) The method of claim 24, wherein the object includes a mouse.

28. (Previously presented) The method of claim 27, wherein the mouse includes a grounded linkage.

29. (Currently Amended) The method of claim 28, wherein the outputting ~~the~~ first haptic feedback includes outputting the first haptic feedback via the grounded linkage.

30. (Previously presented) The method of claim 27, the mouse including at least one of a force detector and pressure detector, the method further comprising detecting at least one of a force and a pressure.

31. (Currently Amended) The method of claim 30, wherein the outputting the first haptic feedback is associated with the detected at least one of the force and the pressure.

32. (Previously presented) The method of claim 24, wherein the simulated palpated feature is simulated as physically below the graphical representation.

33. (Currently Amended) The method of claim 24, wherein the first haptic feedback simulates a three dimensional contour of the graphical representation.

34. (Previously presented) The method of claim 33, wherein the object is substantially constrained to movement in a geometric plane.

35 – 41. (Canceled)

42. (Currently Amended) A simulator, comprising:

a manipulatable object in communication with a processor, the processor associated with a graphical representation of at least a portion of a virtual subject;

a sensor coupled to the manipulatable object and in communication with the processor,
the sensor configured to update data values associated with at least a portion of a virtual
appendage in the graphical representation based on a manipulation of the manipulatable object;
an actuator coupled to the manipulatable object and configured to output haptic feedback
based on interaction of the portion of the virtual appendage with a region within the graphical
representation, the haptic feedback simulating a heartbeat-induced vascular pulse of the virtual
subject; and

~~The simulator of claim 35, wherein the manipulatable object includes a housing of a mouse.~~

43. (Previously presented) The simulator of claim 42, the actuator being coupled to the housing of the mouse, the actuator configured to output the haptic feedback.

44. (Currently Amended) The simulator of claim ~~35~~ 42, wherein the object includes a mouse.

45. (Previously presented) The simulator of claim 44, wherein the mouse includes a grounded linkage.

46. (Previously presented) The simulator of claim 45, the actuator being configured to cause the grounded linkage to output the haptic feedback.

47 - 54. (Canceled)

55. (New) The method of claim 4, wherein the host computer includes an application program which comprises the steps of:

- creating the graphical representation of the virtual body part;
- moving the virtual hand relative to the virtual body part in response to input from a manipulatable object; and
- outputting a feedback based on interaction of the portion of the virtual hand with a region within the virtual body part.

56. (New) The method of claim 55, wherein the feedback may be visual, audible or haptic feedback.

57. (New) The method of claim 55, wherein the interaction of the portion of the virtual hand with a region within the virtual body part is a predetermined interaction.

58. (New) The method of claim 55, wherein the feedback simulates a heartbeat-induced vascular pulse of the virtual body part.

59. (New) The method of claim 58, wherein the simulation of the heartbeat-induced vascular pulse may have variable parameters.

60. (New) The method of claim 55, wherein the virtual appendage has a shape different from the shape of the object.

61. (New) The method of claim 4, wherein the virtual hand has a shape different from the shape of the object.

62. (New) The method of claim 18, wherein the virtual hand has a shape different from the shape of the object.

63. (New) The method of claim 30, wherein the outputting the second haptic feedback is associated with the detected at least one of the force and the pressure.

64. (New) The method of claim 24, wherein the second haptic feedback simulates a three dimensional contour of the graphical representation.

65. (New) The method of claim 64, wherein the object is substantially constrained to movement in a geometric plane.

66. (New) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for updating data values associated with at least a portion of a virtual appendage displayed in a graphical environment of a host computer and outputting a first and second haptic feedback to an object coupled to the host computer, the method including:

updating data values associated with at least a portion of a virtual appendage displayed in a graphical environment of a host computer based on manipulation of at least a portion of an object coupled to the host computer;

producing a virtual palpation of the virtual subject within the graphical environment when the portion of the virtual appendage directly contacts a virtual subject part;

outputting a first haptic feedback to the object based on interaction of the portion of the virtual appendage with a graphical representation of the virtual subject within the graphical environment, the first haptic feedback simulating a palpated feature that is one of on and below a surface of the graphical representation of the virtual subject; and

outputting a second haptic feedback to the object based on interaction of the portion of the virtual appendage with a graphical representation of the virtual subject within the graphical environment, the second haptic feedback simulating a palpated feature that is one of on and below a surface of the graphical representation of the virtual subject.